Message

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Sent: 3/6/2019 9:03:39 PM
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Subject: STICS: Clearance Completion: #ORD-029940: Findings from the 2015-2016 NHANES data on risks from combined exposures to six phthalates poster

The clearance for this Human Health Risk Assessment product is complete:

- **Product type, subtype:** Presentations and Technical Summaries, Poster
- **Product title:** Findings from the 2015-2016 NHANES data on risks from combined exposures to six phthalates poster
- **Author(s):** Reyes, J and P. Price
- **Initiator:** Jeanette Reyes,ord/ncea/nceartp/emag
- **ORD Tracking Number:** Tracking # ORD-029940
- **Impact / Purpose Statement:** Some phthalates are known endocrine disruptors and human exposure are ubiquitous. This work explores temporal and age-related phthalate data for a susceptible and previously unexplored age range in the general US population.
- **Product Description / Abstract:** Phthalates are used in a range of consumer goods, resulting in widespread exposures among the general population in the United States. Exposures to specific phthalates vary over time due to changes in patterns of phthalate use. A previously published study evaluated trends in exposures and associated risks to six phthalates from biomonitoring data collected under the National Health and Nutrition Examination Survey (NHANES) from 2005 to 2014 (Reyes and Price, 2018). This work extends that analysis to consider the most recent (2015-2016) NHANES data. Because the most recent survey expanded data collection to children ages 3-5, this work also includes findings for this age group. Doses for the phthalates were estimated for each surveyed individual using reverse dosimetry. The Hazard Quotients (HQs), Hazard Indices (HIs), and Maximum Cumulative Ratios (MCRs) were determined for individuals using the phthalates' tolerable daily intakes. HQs are a measure of chemical-specific risks, HI is a measure of cumulative risk, and MCR quantifies the degree to which a single phthalate drives the cumulative risk of an individual. There was a 1.4-fold decrease in the mean HI between 2013-2014 and 2015-2016 (0.15 to 0.11) and a 1.2-fold decrease in the percentage of participants with an HI>1 (0.79% to 0.68%). Decreases in the HI over 2005-2014 were largely due to decreases in risks from two phthalates: diethylhexyl and dibutyl phthalate. Decreases in the most recent data were mostly due to decreases in diisononyl and diisodecyl phthalate. The trend of higher HIs with younger ages observed in prior data occurred in the newest data. Children ages 3-5 had higher HIs than older children and adults. Mean HI values for age ranges of 20+, 12-19, 6-11, and 3-5 years, were 0.10, 0.09, 0.18, and 0.23, respectively. Within the latest data, the fractions of the age groups with HI that exceeded one ranged from 0.0% in ages 12-19 to 1.5% in ages 6-11. However, the frequencies of exceedances were too small to determine if there were an age-related trend. MCR values in the new data were low and inversely correlated with HI indicating that a single phthalate usually drove the hazards for highly-exposed individuals. These findings indicated that phthalate exposures in the US continue to change over time.

- **Tracking and Planning**
  - Task ID: 3.231
  - Task: Approaches to Cross-species Data Integration to Support CRA
  - Product Title: Apportioning Chemical Stressors for the most affected portions of exposed human populations and ecological receptors
  - Product Description: Applying the maximum cumulative ratio methodology to phthalate biomonitoring data from the National Health and Nutrition Examination Survey
  - Project: Cumulative Risk Assessment Methods and Applications
  - Topic: Community and Site-specific Risk
  - Research Program Area: Human Health Risk Assessment

- **Product Category:** Does not require Advance Notification
- **QA form attached in STICS?:** Not Applicable
- **QAPP Reference:** Not Applicable
- **Keywords:**
  - phthalates
  - risk assessment
  - biomonitoring data
  - Children's Environmental Health

- **Meeting Information:**
  - Meeting Name: Society of Toxicology
  - Meeting Start Date: 03/10/2019
  - Meeting End Date: 03/14/2019
- **Published Date:** 03/06/2019

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